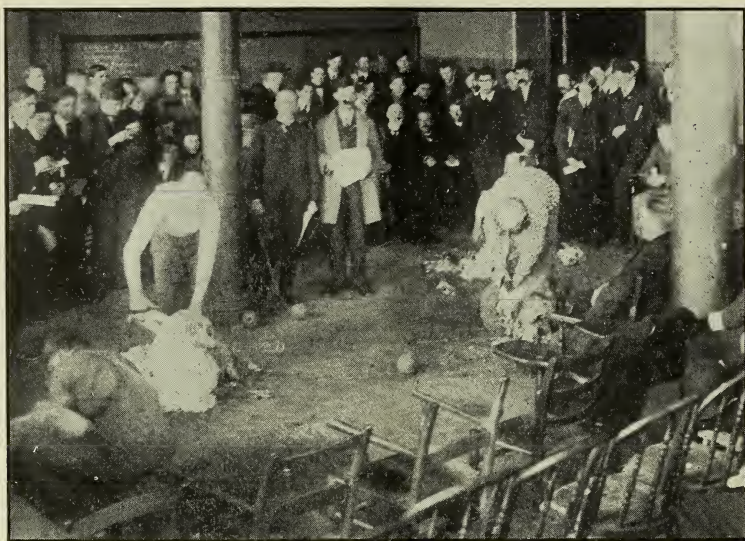


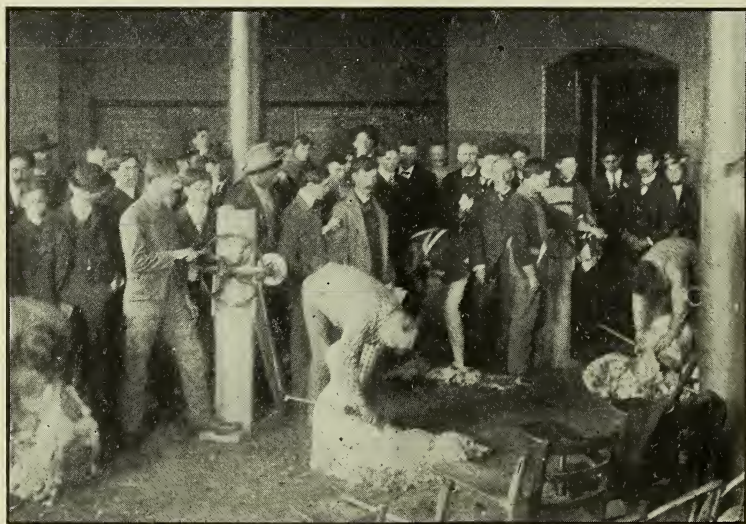
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SCENES AT THE SHEEP SHEARING FESTIVAL



SHEARING BY HAND



SHEARING BY MACHINE

THE AGRICULTURAL STUDENT.

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EDITORIAL CHAT.

The progress that is being made in the preparations for the Louisiana Purchase Exposition seems quite gratifying and the work of building is progressing very rapidly. It is said that at no former exposition of this nature has the work been so far along for the time, and it is believed that the dedication exercises, which take place April 30, will see plans well completed and matters in good condition for a successful exposition.

Mention is made elsewhere in this issue of the construction and size of the building that is to be devoted to agriculture and a casual perusal will reveal the fact that nothing has been spared to make the agricultural exhibit such as has never before been attempted. While expositions have been coming frequently during the past few years, and while many are predicting a marked decline in the interest in such enterprises, they are marks of a nation's progress, and so long as a nation is prosperous there will undoubtedly be a demand for this sort of thing. In no feature of our development is the advancement more rapid than that which is taking place along agricultural lines, and the effect of such expo-

sitions is a wonderful benefit to agriculture. The feature that is of most interest to educators is that of the display to be made by agricultural colleges and experiment stations, illustrative of methods and means. The committee in charge of this work is an exceptionally able one and it is believed that much good will come from such an exhibit. The fact that the exhibit is to be largely one of methods is important, and brings out the truth that it is no longer a question of what agricultural colleges shall teach, but how shall the various subjects be taught that most good may accrue to the student. Other departments of the agricultural exhibit are also in advance of former attempts and it is believed that in no previous exposition have the plans for agricultural displays been so completely perfected. Much may therefore be legitimately expected from the educational features of the exposition.

The report of the Director of the College of Agriculture at Cornell University has been received and contains several items that might well be considered by other agricultural institutions. The report shows that while there has been some increase in the number of regular students in attendance at the college and considerable work of unusual importance has been accomplished during the year, the most striking feature is the number of people which the university reaches in its educational efforts. In the Farmers' Reading Course the number registered is about 5000, while the course for the farmers' wives exceeds this number by 2000. The number of Farmers' Reading Course clubs is fifty-five, and of Junior Naturalists clubs 560, with a membership in the latter division of 20,000. In addition to this the Home Nature Study Course has 2,000 members on its roll, making a total of persons reached by

the College of Agriculture of between 30,000 and 35,000." This is a most commendable showing and one that it would be well for other institutions to seriously consider. Surely there are much larger things in store for the agriculturalist of this state and the University has a much wider duty to perform than is at present possible. Hasten the day when our appropriations for the College of Agriculture shall be sufficient to allow an extension of the University work in some such way as this, or when some other means may be devised to reach the people that it cannot now reach.

A recent edition of the Columbus Dispatch contains a leading editorial, a column in length, on the subject of agriculture in high schools. It should be explained that the editorial is the result of an effort on the part of Professor Hunt to bring this matter before the people by sending to all newspapers of the state, as well as to several hundred citizens interested in educational work, a copy of a recent report of the committee on "Methods of Teaching Agriculture" of the American Association of Agricultural Colleges and Experiment Stations. The fact that such a paper as the Dispatch should give the subject the place of a leading editorial and should devote an entire column to its discussion cannot be without its significance. The writer discusses the needs for agricultural education and credits the work done by our agricultural colleges after the fashion of a veteran agricultural writer and closes with what is really a plea for high school agriculture. "Why should not the township, village and city high schools provide courses in farming," he writes, "as well as courses in manual training, in business forms and in the sciences?" And further in speaking of the number of high schools of the state he says, "in

these are thousands of pupils who come from the farm and there are thousands no doubt who ought to be in these schools, but who are kept on the farm and who might be there if instruction in agriculture were provided."

It is an interesting fact that the sentiment expressed above is rapidly spreading and if indications are not very deceptive Ohio will soon follow the example set by such states as Minnesota and Wisconsin in the introduction of agriculture into at least a part of its secondary schools. It may also be of interest to note, that one high school, that of Elyria, is already preparing for this initial step. The superintendent, Mr. Comings, has had not a little correspondence with the college on this subject and already has quite a number of students, who have formed a club for conducting experiments in agriculture, which the boys are pursuing with much enthusiasm and profit. It is expected to introduce the course the coming year and Mr. Comings is busy arranging details to this end.

This thing is surely coming; there will undoubtedly be an increasing demand for it as time goes on. Create a real popular demand and a way will be found to supply it. It therefore behooves all who are interested in agricultural education to lend their support and influence toward increasing the sentiment that is arising in this direction.

The Sheep Shearing Festival.

On Friday, April 17, the much-talked of sheep-shearing festival, once so popular in England, the original home of many of our best breeds of sheep, was held in the basement of Townshend Hall. That it was of passing interest would be putting it mildly, judging from the throngs of people who crowded the large room all day long. Students from all de-

partments of the University were in evidence in large numbers, besides many prominent sheep breeders and feeders from various parts of the state. Even the attractions of the beautiful weather could not allure the fair co-ed from the interesting scenes being enacted in the live stock room. Staid old professors laid aside their books and gravity to add dignity to the occasion by their presence.

A neat little sum of money, contributed by several persons who wished to be generous instead of noted, to be given as prizes, added interest to the friendly contests that took place between experts and amateurs, both in hand and machine work.

About 75 sheep belonging to O. S. U. and other parties had been secured as victims to the day's sport.

A scale of points in which the quality of work done counted 30 points, number of cuts, speed and handling instruments each 20 points, and the handling of the sheep 10 points, had been arranged so that all contestants were judged by the same standards. The judges were J. C. Westenhaver, of Amanda, Ohio, and C. S. Chapman, of Marysville, Ohio.

About 10 o'clock, before a large audience, the first contest began, and was as follows: Shearing three sheep with hand shears by experts—First prize \$5, J. L. Ryder, Georgesville, 85 2-3 points; second \$3, J. H. Irwin, Harpster, 81 2-3 points; third \$1, Ed Wilcox, Delena.

The second contest was interesting, as it showed what some of these expert hand shearers could do with a machine. Shearing two sheep, one medium woolled and one fine woolled, with the machine by men inexperienced in its use. First prize \$5, J. L. Ryder, 90 1-2 points; second \$3, Fred Andrews, 69 points; third \$1, L. M. Smith, 64 points.

Third contest, shearing one sheep with machine, open to anyone. First prize \$5,

J. L. Ryder, 73 points; second \$3, J. H. Irwin, 70 points; third \$1, F. M. Hamilton, 61 points.

With the fourth contest the fun began! Five swarthy students dressed in blue jeans and ticking blouses might have been seen walking nervously about the room, each with a determined look on his face, later dampened by considerable perspiration. The motto of each seemed to be—"Get through first, whole hide or not." (It might be said that in most cases it was not.) These men, who had never shorn a sheep, were to give their first exhibition in a few minutes. The result was as follows: First prize \$1, W. G. Hyatt, 82 points; second 50 cents, W. T. Florence, 63 points; third 25 cents, G. O. Thompson, 53 points; fourth 13 cents, E. R. Winns, 51 5-8 points; fifth 7 cents, C. A. Bickham, 47 points. To say that these sheep were quickly or even smoothly shorn would be handling the truth recklessly.

Contest No. 5—For the best exhibit of removing, handling and tying two fleeces, one medium and one fine wool, one prize \$5, J. L. Ryder, 91 1-2 points.

The sixth contest, best exhibit of shearing one large sheep (yearling Cotswold wethers were used) was entered by four men. The one prize, \$5, went to Ed Wilcox, 95 points. Several other contests had been placed on the program, but it was found impossible to secure the required kind of sheep.

The Chicago Flexible Shaft Shearing Machine Company was well advertised by their expert representative, J. Paulson, who gave several exhibitions of work done by their machine. The quality of his work was first-class, as well as the time, shearing five sheep in 25 minutes. To most of the crowd it was a new feature to shear a sheep by machinery, but he thoroughly demonstrated the successful manner in which it can be done. It

can hardly be doubted that in a few years the greater part of the shearing in the United States will be done by machinery.

During the afternoon Mr. Joseph E. Wing, who is well known to all students of agriculture as a successful sheep and cattle breeder, spoke on the western method of sheep raising and shearing. He said that owing to the lack of railroads and even passable wagon roads, it is necessary for the ranchmen to drive their sheep, often as many as 10,000 in one flock, many miles to some point along the railroad, where they were kept in open sheds built for the purpose until they were sheared. The work of shearing is done by a contractor, who hires his men, paying them so much per head. Here Mr. Wing spoke of the superiority of the American bred workman, not only as a shearer but as an all-around cowboy and ranchman. These shearers average from 100 to 120 sheep per day. He further spoke of the fidelity and trust with which a shepherd will guard his employer's flock, even sacrificing his life in an attempt to save the sheep.

Prof. Plumb also took occasion to make a few remarks about the proposed Seth Adams Memorial Building which is to be erected on the O. S. U. campus some time in the future. It is hoped that every stockman in the state will feel it a privilege to contribute liberally to the proposed building.

It is to Prof. Plumb's assiduity that the success of the festival must be attributed. That it was a success, educationally, socially, and financially, to some, is granted by the most pessimistic. Several old sheep men were heard to express their satisfaction at having been present, that they had learned many new things during the day.

This, however, is not the greatest result hoped to be gained by such meetings as this. By actual investigation it has

been found that a large percentage of the farmers in Ohio know nothing of the Ohio State University, except the fact that it exists. They seem to be slowly awakening to the fact that the farmer needs a higher education than he has heretofore received, but how this is to be obtained, outside of probably one newspaper they take, they are wholly ignorant. It seems as if the college must be brought before them in some other than in the purely educational sense. It is the purpose of such movements as this festival and the Memorial Building to bring about such a condition, the former to get them here and see what is being done, to demonstrate that it is not all the so much despised theory but partially practical work, and the latter to have them feel that by the contribution they have made they have brought an interest in the college. To us it is one of the most feasible methods that could be proposed. It is one in which the students now in college can make themselves efficient workmen, a duty which we owe the future farmer.

CLARK J. HALVERSTADT.

Ernst August Eggers.

The death of Professor Ernst A. Eggers, which occurred Wednesday, April 8, was a great shock to the university, and his loss will be most keenly felt. Professor Eggers was one of the oldest and most popular men in the faculty and few were better known or more generally loved by the student body. As a member of the faculty of the Agricultural College he was always deeply in sympathy with its development and maintained a lively interest in its methods of work.

Professor Eggers was born in the province of Hanover, Germany, January 18, 1855, and his early education was received in the city of Hanover. He came

to America in 1875, where he has since resided. He taught first in the schools of Wisconsin and later went to Michigan, where he was graduated from the State Normal School, and later spent eight years as a teacher in the high schools of that state. One year was spent studying French language and literature at the Sorbonne and College de France and in the fall of 1886 he took charge of the newly created department of German at the Ohio State University. Under his direction the department has grown to one of the strongest in the university.

He was widely known among the teachers of the state as the founder of the Modern Language Association of Ohio, and was a leading member of the Modern Language Association of America.

The funeral was held from his residence on the university grounds, Saturday, April 11, and was largely attended. All university work was suspended during the day and it was observed as a day of mourning.

He leaves a wife, two children and a host of friends to mourn his early decease.

Work of Ohio Dairymen's Association.

At the last meeting of the Ohio Dairymen's Association it was decided that in order to improve the quality of marketable butter and cheese in the state, two instructors should be appointed whose duty it should be to visit such creameries and factories as desired their services and assist them in overcoming any difficulties which had presented themselves in the process of manufacture.

The men appointed as instructors were D. A. Crouner, of West Jefferson, for butter making, and B. B. Herrick, of Wellington, for cheese making.

A circular has been issued by the Association stating the objects and methods of this plan of work. The Association wishes it understood that the experts are not to be furnished to teach butter and cheese making, but, rather, to aid butter and cheese makers to overcome and get rid of faults in their product. It is the hope of the Association that the work of the instructors will aid in the production, in Ohio, of a better and more uniform butter and cheese.

It should also be understood that the creamery or cheese factory which secures the aid of an instructor is to pay the expenses of the instructor, and the Ohio Dairymen's Association is to pay for the time the instructor actually puts in. Unless the instructor considers it essential, he will not give more than three days of his time free at one visit. A sample of butter or cheese sent to the instructor with an outline of the method of manufacture and suggestions as to what the fault is that the maker wishes to overcome, might put the instructor in position to write suggestions that would enable the maker to get rid of the trouble, thereby saving the proprietor the expense of a visit by the instructor. The expense of sending such samples must be prepaid by the sender.

Those persons who are interested in getting a local dairymen's meeting, or those who desire the services of either of the instructors, should correspond with the secretary, D. A. Crouner, West Jefferson, O.

Regarding local meetings, the Association wishes to announce that all the expenses of the speakers will be furnished by the Association, except expense of hall and local advertising. Before a meeting will be arranged for, the secretary must be assured that the meeting will be well advertised and supported by petitioners, and that a proper audito-

rium will be furnished for speakers. To this end, the secretary will gladly furnish properly printed petition blanks. It is thought best not to hold local meetings before October, 1903.

Growing Summatra Tobacco Under Shade.

The tobacco industry is fast becoming one of the most important subjects with which the Department of Agriculture has to deal. There is a widespread interest in the work, especially in the experiments being carried on in Connecticut on raising Summatra tobacco under shade. It was found by early investigations by the Division of Soils that the Connecticut soil was almost identical with that in Summatra, and it was thought that if an artificial climate could be produced the Summatra leaf might be grown. It was tried and found wonderfully successful, the leaf produced being entirely as thin and valuable as the real Summatra. The plan was so successful that an industry soon developed.

The growing of Summatra tobacco under shade involves a considerable outlay of time and money, and it is not advisable to try it except where the Soil Survey has indicated a reasonable chance of success.

In this article only the results of these experiments in Connecticut will be given, as space will not permit of lengthy details.

In 1899 Congress authorized a Soil Survey of the tobacco districts of the United States, and in the summer of that year a survey was made of about four hundred square miles in the Connecticut valley. This area extended from South Glastonbury, Connecticut, to South Hadley, Massachusetts. This survey was made with the purpose of making experiments to try to improve the Connecticut leaf. The one great trouble with this tobacco was that it did not conform to the

present requirements of the cigar trade. The Connecticut Havana had long been recognized by the trade as the most desirable tobacco for wrapper purposes, but the leaves were too large, the veins too large, the base of the leaf too glossy and lacked texture and style, while the color of the leaf was far from uniform.

In these experiments an attempt was to be made to secure a radical change in the type of leaf by close planting, by allowing many more leaves to the stalk, by very rapid growth, by shading, and possibly by irrigation.

In the spring of 1900 arrangements were made through the co-operation of the Connecticut Experiment Station, to grow a small area under cheese cloth shade, and a frame-work was erected over about one-third of an acre and covered with ordinary cheese cloth. About one-half of this area was planted with the ordinary Connecticut Havana seed, and the other half with Florida grown Summatra. On the fermentation of this tobacco it was at once seen that the Connecticut Havana seed leaf was much finer than that grown outside, but that the ribs and veins were still too large for the most economical commercial use. The Summatra leaf, however, was a vast improvement over anything that had been grown in the state, and while it was not a perfect substitute for the imported Summatra leaf, it gave promise of more desirable results if the experiments were continued on a larger scale and under somewhat different methods.

The use of the shade was not new, as it had been used in Florida with great success and the seed which gave the most valuable leaf was the Florida-grown Summatra seed. The shades used in Florida are made of lath instead of cloth, with equally good results.

In the spring of 1901 arrangements were made with a number of growers by

which forty-one acres of shade were erected, and the crops cultivated under the direction of Mr. Floyd, the tobacco expert of the Department, and a number of assistants. There were thirteen growers who co-operated in this undertaking, located in various parts of the Connecticut valley. It is estimated that the growers invested from \$20,000 to \$25,000 in this work, while the Department spent about \$10,000 for the supervision of the work. Of the forty-one acres in the thirteen farms 35.88 acres were Summatra tobacco and the rest Connecticut Havana. The total cost of the shade ranged from \$260.03 to \$403.64 per acre, the average being \$286.70 per acre. This included the cost of the material, such as lumber, hardware and cloth, and the labor of putting these together. The cost of fertilizers ranged from \$10.51 to \$64 per acre, the average being \$45.31.

The cost of cultivation averaged about \$47.94 per acre, the cost of harvesting averaged about \$137.93 per acre, and the warehouse work averaged \$139.29 per acre. The total cost of the crop averaged somewhere near \$657.17 per acre.

The total yield on 35.88 acres of Summatra tobacco was 51,308 pounds, or an average of 1430 pounds of cured tobacco per acre. The total yield after fermentation was 40,211 pounds. About 71 per cent. of the crop was wrappers, 16 per cent. seconds and 13 per cent. trash.

It is estimated that the cost of the Summatra tobacco, barn-cured, and including the whole cost of the shade, fertilizers, cultivation, and harvesting, was a little over 36 cents per pound. The cost of the finished product, including the cost of warehouse work and allowing for the loss in this stage of the work is estimated at 51½ cents per pound, including the total cost of the shade. The shade may be used for several years, so that after the first year the cost is much less.

Dr. Jenkins, Director of the Connecticut Experiment Station, has reported that a portion of the shade-grown leaf raised at Poquonock during the summer of 1901 has been sold at an average price of \$1.91 per pound, the prices ranging from \$1.40 to \$2.50 per pound. It may thus be seen that while the total cost per acre is high the high price demanded by the finished product insures a handsome income to the farmers. It is highly probable that we shall see a great increase in the land devoted to this purpose in the near future. T. L. W.

Secondary and Elementary Courses in Agriculture.

The last report of the Secretary of Agriculture contains the following item, which is of interest, regarding the attitude people are taking and the sentiment that is arising with respect to more general dissemination of agricultural education:

"Institutions for secondary and elementary instruction in agriculture are becoming more numerous. Schools of this class already established have been continued, new schools are being established, and courses of instruction in agriculture, nature study and gardening are being introduced into existing public and private schools. The marked success of the agricultural high schools established in connection with the universities of Minnesota and Nebraska indicates that there is a demand for agricultural courses of parallel degree with those offered in various manual arts in our city high schools. Already there is a promising movement for the establishment of special agricultural high schools in different localities separate from the colleges, and some instruction in agriculture is now given in a number of normal and public high schools. Students taking such

high school courses would undoubtedly be able to better appreciate the work of this Department and the agricultural experiment stations and would have a better outlook regarding the movements of our times for the improvement of agriculture, which would enable them to become intelligent, progressive, and successful farmers. All over our country farmers are sending their children to public high schools and paying tuition for their instruction. They have, therefore, good reason to urge that courses on subjects related to agriculture should be introduced into these schools, especially in towns which are wholly or largely dependent on the neighboring farms for their commercial success, if not their very existence.

Since the funds expended in promoting technical education in agriculture are in the nature of investments, which will be richly repaid in larger amounts of assessable farm property and the increased wealth that comes from improved farm products, both the states and the local communities can well afford to make liberal contributions to the support of courses in agriculture in the secondary schools, as well as in the agricultural colleges.

Progress is also being made in the movement for the consolidation of rural schools, which has already resulted in improved conditions in the schools of Ohio, Massachusetts, Iowa and other states. Such consolidation makes it possible to introduce nature study in which matters pertaining to agriculture, horticulture, and domestic arts are easily included. Several states have already passed laws requiring teachers to prepare themselves to give instruction in nature study and agriculture, and exercises and illustrative material for such work are being more frequently published, often with the aid

of the teachers in the agricultural colleges.

Another closely allied movement at present manifest, principally in the city schools, is the school-garden movement—the introduction of garden work, with flowers and vegetables, into the graded schools as a weekly or semi-weekly exercise. Wherever work of this kind has been tried under proper supervision it has aroused considerable interest on the part of the students, has furnished excellent material for nature study work, and has correlated well with the other studies in the curriculum.”

Bees as Related to Fruit Growing.

Who upon an Ohio farm is not acquainted with the bees that are seen flying among the flowers in the spring and summer? Yet many of us do not know them as well as we should, even though we have had certain experiences with them that we would not care to repeat.

We owe a great deal to the bees, more than many of us think, until we take into consideration the work they do. One of our important crops that is almost entirely dependent on bees is the clover crop, which would not produce seed were it not for the visits of the bumble-bee, who, in gathering honey from the blossoms, also carries the pollen from plant to plant as he visits the heads of clover, and thus is the agent that is necessary for the pollination of the flowers in order to produce seed.

The bumble-bee cannot be rated as a domestic animal as our honey bees, but the latter have become so dependent upon man for care that they are, to all practical purposes, domesticated.

Many of our plants are entirely dependent on insects for pollination and were it not for the visits of the insects they would not produce fruit. This is

especially true of those flowers that must be pollinated by pollen from other plants. Self-pollinated plants do not require the aid of insects. Plants that are pollinated by means of the wind produce a large amount of pollen, while those producing a small amount of pollen must be aided by some other means. In a series of experiments conducted under the direction of the United States Department of Agriculture concerning the pollination of pears, and reported in Bulletin 5, Division of Vegetable Pathology, it was found that many of the common varieties required cross pollination, as they were either wholly or partially incapable of setting fruit when limited to their own pollen. Of the varieties which were found to need cross pollination the Bartlett and Anjou were noticed to produce fruit when cross pollinated either artificially or by insects, and each, while being self-sterile, would produce fruit when pollinated from each other. In speaking of insect pollination this bulletin further states: “The common honey bee is the most regular and important abundant visitor, and probably does more good than any other species. The hairy coats of the bees and their brushes for carrying pollen, renders their visits more efficient than those of other insects, in crossing flowers.”

Mr. James G. Needham, in the *American Naturalist* for May, 1900, says in comparing bees and flies as pollinating agents, that: “The bees are much more rapid in their work than the flies,” and that, “while a fly is visiting one flower a bee would visit a score.” He places the bees first in importance in pollination of flowers. Bees go to the flowers for two purposes, to gather honey and to gather pollen. From the pollen the bees produce what is known as bee bread.

For several years the Horticultural Department of the University has carried on a series of observations as to the

work of bees in the collecting of honey and pollen. It was found that the largest per cent. of the bees gathered pollen in the earlier part of the day, but the change was gradual until, when the bees were working at their hardest, from two to three p. m., very few were noticed to enter the hive with pollen. As to the amount of honey or pollen a bee collects, it was found by careful experiments that bees collecting honey, in the height of the working season, returned to the hive with a load of a little more than one-fourth of its own weight in honey; and that the pollen collectors carried a load of pollen a little less than one-sixth of their own weight. The bees that gather pollen are perhaps more important in the pollination of flowers than the honey gatherers, although their load is not quite so heavy. It is not probable that the bee gathers honey and pollen at the same time.

Climatic conditions effect the visits of insects to the flowers and if the blossoming takes place during a period of cool, cloudy weather, the insects will not work on the plants except to a very small extent. For a given tree the period during which honey and pollen may be collected is rarely over five or six days, and if two or three days of this time are cloudy the opportunity for the bees to visit the flowers and gather pollen or honey is lessened and likewise the opportunity for pollination of the flowers. Flies of various kinds will work on the flowers in cooler weather than bees. The fruit trees that claim the attention of the bees most are in the following order: Plums, cherries, apples, peaches and pears; but the apple probably leads in honey produced. Aside from our fruit trees the American Linden, or Basswood, is a very important tree in honey production.

The keeping of a few bees on a farm is of so much value in the work that

they do in pollination, and in honey gathering, that any farmer can well afford to care for them, and by proper management they will, in an ordinary season, more than pay for the trouble and cost in caring for them.

Some little complaint has been raised by occasional observers that bees injure grapes, but careful observations were made at the Michigan Experiment Station on this point, and it was found that wasps caused the cutting of the grape skins and that the bees were simply making into honey that which would otherwise be lost to the grower. In some portions of the country English sparrows have also been noticed to cause great injury to the grapes.

THEO. W. DITTO.

Plans for Exhibit of Agricultural Colleges and Experiment Stations at the Louisiana Purchase Exposition.

At its convention at Atlanta, Georgia, in 1902, the American Association of Agricultural Colleges and Experiment Stations voted to undertake an exhibit of the distinctive work of the institutions represented, especially along the line of education and research in agriculture and mechanic arts at the Louisiana Purchase Exposition. To plan and manage this exhibit, a special committee was appointed, consisting of the following persons: Chairman, W. H. Jordan, New York Experiment Station; Secretary, A. C. True, U. S. Department of Agriculture; H. J. Waters, Missouri Agricultural College; W. M. Hays, Minnesota Agricultural College; W. E. Stone, Purdue University; Thos. F. Hunt, Ohio State University; C. F. Curtiss, Iowa Agricultural College; J. K. Patterson, Kentucky Agricultural College; H. W. Tyler, Massachusetts Institute of Technology. Later W. T. Harris, U. S. Com-

missioner of Education, was added to the committee.

This committee has met and the general plan of the exhibit has been determined, which it has been decided shall consist of appliances and objects illustrating methods and results, and laboratory exhibits, as distinguished from library exhibits.

In brief it is proposed that the exhibit take some such form as the following:

AGRICULTURAL EDUCATION.

Historical and statistical. Exhibit of Bureau of Education. The logical basis of the land grant colleges, their relation to national and state governments, their material equipment, financial resources, organization and administration, attendance, number and occupations of graduates. This part will necessarily consist of documents, charts, diagrams, etc.

Agronomy. Laboratory for instruction in soil physics. Exhibit of methods of instruction in farm management and farm equipment.

Agrotechny. Laboratory apparatus and methods of instruction in dairying, sugar making, manufacture of olive oil, etc.

Zootechny. Laboratory for the study and judging of animals, with demonstrations in special building regarding care, management and judging.

Rural Engineering. Models of farm machines and buildings.

Secondary Agricultural Schools. Statistics of, with library display of equipment, organization, literature, courses, etc.

Dairy Schools. Methods and apparatus.

Farmers' Institutes. Historical and statistical display.

AGRICULTURAL RESEARCH.

Historical and Statistical. Exhibit of Office of Experiment Stations. Relation

of stations to national and state governments, organization, equipment, administration and financial resources.

Agronomy. (a) Soil investigations: apparatus. (b) Plant nutrition: Apparatus for study of plant nutrition under glass, with possibly illustrative experiments in operation. Display of results. (c) Plant breeding: Results with various crops, statistical methods. (d) Plant introduction: Display of plants introduced by government and stations.

Zootechny. (a) Animal nutrition; Model of respiration apparatus for use with animals. Illustrative feeding tests. (b) Human nutrition: Dietary studies, statistics and illustrations. Commercial foods and their composition. Respiration calorimeters and other research apparatus. (c) Economic Entomology. Display of life history of various important insects as determined by stations.

Agrotechny. Dairying. New apparatus and methods for station investigations. Illustrations of recent work in cheese curing, etc., etc.

Rural Engineering. Appliances used in investigational work, tests of machinery, etc. Improved farm buildings.

EDUCATION AND RESEARCH IN MECHANIC ARTS.

Samples of work of students, including drawings, examination questions and papers, students' theses and drawings completed during course of study.

Specimens of student shopwork in wood and metal.

Exhibit of laboratories, models, etc., showing methods of instruction, character of equipment, apparatus and instruments used in instruction in shopwork and engineering.

Exhibit of apparatus and equipment for investigation; including instruments for testing speed, tension and pressure, water motors, instruments for measur-

ing rise and fall of tides and streams, for measuring velocity of water meteorological apparatus and instruments of precision for measuring velocity and intensity of electrical currents.

It is proposed to ask the exposition company for space for the general exhibit in agriculture and mechanic arts in the Educational Building. Not less than 15,000 square feet of floor space will be required. Negotiations will also be entered into with the exposition company to provide at their own expense a special building for a portion of the display in animal husbandry.

It is expected that the colleges and stations will provide most of the exhibits at their own expense. Special installation material for the more costly exhibits will probably have to be paid from the exposition appropriation.

A sub-committee, consisting of Thos. T. Hunt, Chairman; C. F. Curtiss, and H. J. Waters, has been appointed to arrange for the display of Zootechny and of Agrotechny in the Educational Building. This committee will determine the division of space, laboratories and equipment, individual exhibits, cost of exhibits and the institutions and persons who shall prepare the exhibits. Also the number, kind and cost of demonstrations, and the literature, its cost and distribution.

Plans are all now well under way and it is hoped to make the display such as shall represent accurately and intelligently the work done at these various institutions in such a way as to not only bring credit to colleges and stations represented, but to demonstrate before the people the value of the work that is being done. The idea and plan of exhibit is distinctly new and it is believed that it promises much more than the old form of library or statistical exhibit.

Mr. J. L. Farmer has been selected by the committee as its chief special agent to have charge of the work of arranging and preparing the exhibit and to represent the committee wherever necessary.

The appropriation made by Congress for this exhibit was \$100,000.

Sugar Beet Growing in the Arkansas Valley.

The fame of the Arkansas valley in eastern Colorado for the production of sugar beets is in large measure justly merited. Probably nowhere in the world certainly nowhere in the United States, do sugar beets reach a higher state of perfection than in this region. Soil and climate combine to make the conditions ideal for the production of beets and where irrigation water is plentiful fabulous returns are often received from an acre of land. The soil which seems best suited to this purpose is a fine sandy loam, large areas of which are found throughout the valley. The soils of the entire region contain a greater or less amount of soluble salts or "alkali," which if not present in too large amounts seem to be very acceptable to the beet.

The climate is one of generally even temperature, cloudless skies and little precipitation. All beets are produced by irrigation, which here reaches a high degree of perfection, the water from the river being used for this purpose.

The beets are sown much as they are in the east, in rows about 18 inches apart, the plants being thinned by hand to one about every 6 or 8 inches after they are well started. This work is largely done by Mexicans and Indians and is one of the most expensive processes included in their cultivation. They are cultivated frequently, to keep the ground in good condition and the water is run through the furrows between the rows when

needed. They are ready to harvest by the last of September or first of October. The beets are loosened in the ground by a plow made for the purpose, topped and hauled to the nearest railroad station or to the factory. Where shipped, the sugar company pays cost of shipment.

There is a large factory in the valley, which is situated at Rocky Ford, and which has a daily capacity of 1000 tons of beets, or over 100 tons of refined sugar. There is also a small factory at Sugar City. The company owning the Rocky Ford factory also owns large areas of land in the region and it is doing much toward developing the industry and introducing better methods of culture.

The yield per acre varies from five to forty tons, ten tons being an average for the whole valley. Fifteen tons is considered a good yield for ordinary conditions, thirty is quite exceptional, and as high as forty tons have been grown. The average sugar content is between 17 and 18 per cent., although some loads average as high as 25 or 26 per cent. These figures are almost sufficient to frighten the eastern grower out of the business, but they are authentic, as taken from the results of tests at the Rocky Ford factory during the season of 1901.

The price paid the farmer is \$4 per ton where the beets run 15 per cent. sugar and 78 per cent. purity, with an additional 33 1-3 cents for every per cent. of sugar over that amount. There were grown for the Rocky Ford factory in 1901, 10,000 acres of beets, and for the Sugar City factory between 3500 and 4000 acres.

The seed used for growing the beets is almost all imported from France and Germany. Attempts are being made to grow the seed in the region, and while these efforts have met with some success, the methods are not entirely practical as yet. A serious difficulty is the presence

of the false chintz bug, which feeds on the blossom and destroys the flowers.

The yield and quality of the beets produced throughout this region indicate a great future for the industry in Colorado. The beet seems to take so naturally to the soil and climate that where irrigation water can be plentifully obtained the eastern growers can in no sense compete with these western lands. The difficulties lie mainly in the cost and uncertainty of the water supply, the high price of land where water is plentiful and the expensive labor necessary in their production. It costs on the average about \$30 to produce an acre of beets and deliver them to the factory. However, with the enormous sugar content and the size of the yield, this, together with similar western areas, will probably ultimately force our eastern growers out of the business.

It should not be inferred from the above statements that this is the only crop produced in the valley. On the contrary, the valley is noted to probably a greater degree for the production of the famous Rocky Ford cantaloupes, which here grow to perfection and which are no less remunerative than beets. The third crop of importance is alfalfa, which is grown in immense quantities throughout the region.

Many other crops do well, especially fruits, so that the diversified interests hinder the development of the sugar beet industry to a certain extent; but notwithstanding this fact, the industry is still in its infancy and if the questions of water and alkali can be solved a wonderful future is assured.

O. S. U. Lake Laboratory.

The announcement of the course at the Lake Laboratory the coming summer indicates quite an advance in the work and largely increased facilities for instruction. A new and commodious lab-

ratory building is being provided, capable of accommodating at least one hundred students and investigators which it is expected will be ready for occupancy at the opening of the term. It will be fully equipped with all necessary apparatus for investigational work. Courses will be offered as usual in zoology, entomology, physiology, ornithology and botany, except that the work has been considerably broadened by reason of better facilities. Credits for work will be given to students with University standing where the courses cover ground of the regular University courses.

As usual special opportunities will be offered for thesis and research work. The term will open June 29 and cover a period of six weeks, with a privilege of remaining two weeks' longer for investigational work. Special lectures have been arranged to be given by outside parties as occasion permits.

The enrollment last year showed about twenty-four students, representing fourteen colleges and universities, and it is thought that this year it will greatly exceed that number.

From the nature of the location a great number of delightful excursions are possible and many rich collecting grounds may be visited, while the surroundings also afford abundant attraction for those seeking recreation.

This summer course is undoubtedly destined to become very popular.

The Agricultural Building at the Louisiana Purchase Exposition.

The contract for the completion of the Agricultural Building at the St. Louis Exposition has been let and work on it has begun. This building is fifteen per cent. larger than any other building at the exposition and is the largest structure

erected for the reception of a single department. It is 500x1600 feet, thus containing a floor space of almost 20 acres. This building and that to be built for Horticulture will probably be the only ones in the exposition bearing color on the outer walls. The Agriculture Building will have used upon it green, with points of brighter color. Garlands, wreaths, and festoons of fruits and flowers are to figure in the color scheme. The architectural members, such as the cornices, and the piers between the mouldings, are to be left white.

The plans for this building have been prepared under the immediate supervision of Mr. Isaac S. Taylor, Director of Works of the exposition, by Mr. E. L. Masqueray, Chief of Design.

The building is probably the best lighted on the grounds. Its fronts are practically successive series of windows, each 75 feet long and 27 feet high. These windows are placed 14 feet from the floor so as to allow the use of the wall space inside for exhibits. Triangular monitor windows supply skylight, while they cut off the direct sunlight, which would quickly spoil many of the exhibits this building will contain.

The grand nave, 106 feet wide, which runs through the 1600-foot length of the building, rises to a height of 60 feet and supplies the grandest vista of installation space of any building ever designed for exposition uses.

The entrances to the building are distributed to serve the visitors. A gradual rising approach will lead up from the northwest, where is located the main picture of the fair. The beautiful slopes of the hill around the building have been assigned to the Departments of Agriculture and Horticulture, and here during the fair there will be maintained a fine display of flowering shrubbery and of indigenous and exotic plants. Hydrants

to supply water to these exhibits at all times have been planned.

On its south side it will have a gallery 500 feet long and 25 feet wide. Here will be the offices for Chief F. W. Taylor and his staff, reading rooms, where the leading agricultural publications will be kept on file, jury rooms and a large committee room. There will also be on this gallery an assembly hall for the meeting of agricultreul and other societies. This hall will be 106 by 50 feet and will have a seating capacity of nearly 1000.

It is worth noting that the pleasant relation of the Division of Exhibits and the Division of Works has resulted, in this case, in a building which is better adapted for the purpose for which it is constructed than is sometimes true of exposition palaces. The Director of Works sought the advice and suggestions of the Chiefs of the Departments and as a result many modifications were made in the first plans suggested, all of which were with the thought of making the building as perfectly suitable for exhibits as possible. Only those who have had experience as exhibitors can appreciate how much this means as compared with a building which is worked out and completed by an architect, who may not have had special exposition experience, or knowledge of the details which may be included without additional cost and without marring the architectural and artistic features. Such slight changes will often modify the building so that instead of being very badly adapted to exhibits it contains all the requisites for permitting successful installation. It is doubtful whether in the working out of any exhibit building so much thought was ever given to the comfort and convenience of exhibitors. The contract calls for the completion of the building by

September 1, thus leaving ample time for the most elaborate installation.

The following letter from McLaughlin Bros., the importers, is of interest:

"Gentlemen: We take pleasure in reporting to you that we have recently sold the two most renowned and most valuable draft stallions that ever changed hands in this country.

The Armour Percheron Horse Company, of Armour, S. D., has just purchased from us the imported Percheron stallion, Pour-Quoi-Pas, for \$7000, which is the highest price ever paid in America for a draft stallion. A month ago Orangiste was sold for \$5500 to parties at Laurens, Ia. Previous to the sale of Pour-Quoi-Pas this was the highest price.

Pour-Quoi-Pas won first prize and championship at the recent international exposition; he also won first prize and championship at the same exposition the year previous.

Orangiste won first prize at the recent international exposition and many of those in attendance thought he should have won championship in competition with Pour-Quoi-Pas.

These are the two best Percheron stallions ever imported to America. Never before did a stallion of any breed win the championship two years in succession."

The International Stock Food Company, of Minneapolis, Minn., reports their sales during the month of March as being the largest in the history of the company. Their factories are being run night and day to keep up with their orders and the office force has been largely increased. The largest trade comes from states where their "Food" has been longest on sale, which indicates that the farmers believe in its value.



French Coach Stallion, Vigoureux 2872, Imported by McLaughlin Bros., Columbus, Ohio.

University News.

The new Veterinary Building is being put under roof and all work is progressing satisfactorily, so that it is expected to have it fully equipped and ready for occupancy by the opening of the new college year.

Professor L. H. Bailey visited the university about the middle of the month on his way to the west. He is making a tour of the country, visiting the leading agricultural colleges for the purpose of gaining information that will help him in his new work as dean of the Cornell College of Agriculture. Extended modifications are contemplated with his entrance into the office and he is taking every opportunity to thoroughly acquaint himself with the men and methods of the best agricultural colleges of the middle west. He will visit Illinois, Iowa, Minnesota and Wisconsin on the trip.

As a result of the sheep-shearing festival the department of animal industry was presented with a sheep-shearing machine by the Chicago Flexible Shaft Shearing Machine Company.

Mr. J. S. Farmer made a short visit to the University the latter part of the month, looking after the interests of the exhibit of agricultural colleges and experiment stations that is to be made at the Louisiana Purchase Exposition. As mentioned elsewhere, Mr. Farmer is special agent of the committee appointed to arrange for the above-mentioned exhibit.

W. R. Comings, Superintendent of the Elyria Schools, was also a visitor at the University during the month. As mentioned elsewhere, Mr. Comings is proposing to introduce a course in agriculture into the Elyria High School and was here looking over the equipment and gathering information that will help in

the enterprise. Those interested in agriculture will watch developments in this case with a great deal of interest.

General Agricultural News.

Charles A. Davis, instructor in forestry in the University of Michigan, has been engaged to prepare a map showing the distribution of forest trees and soil relations for the Ann Arbor sheet of the topographic atlas soon to be published by the U. S. Geological Survey.

Filibert Roth, formerly professor of forestry at Cornell University and later chief of forest reservations in the Department of the Interior, has been appointed professor of forestry in the University of Michigan.

An examination for the position of systematic agrostologist in the Bureau of Plant Industry, U. S. Department of Agriculture, at a salary of \$2,000, is set for May 1.

John D. Rockefeller has offered to pay the extra expenses of students of Cornell University incurred by the recent epidemic of typhoid fever.

Mr. E. E. Ewell, assistant chief of the Bureau of Chemistry, U. S. Department of Agriculture, has resigned to accept the position of manager of the Atlanta office of the Propaganda Department of the German Kali Works.

A. D. Selby, botanist of the Ohio Station, who has been studying at the New York Botanical Garden since December, has been granted a research scholarship of the Garden.

The Missouri State Legislature in the session recently closed appropriated \$100,000 to the State University for building purposes.

Professor R. E. Smith, assistant in botany at the Massachusetts Agricultural College and Experiment Station, has accepted the position of pathologist and assistant professor in botany in the University of California.

R. C. Obrecht of the Iowa Agricultural College has been appointed assistant in animal industry at the Oklahoma College and Station.

R. W. Clark, assistant agriculturist at the Alabama Station, has been appointed professor of animal industry in the Utah Agricultural College.

The income of Purdue University has been increased from one-twentieth to one-tenth of a mill upon the assessed value of the state. The increase will be about \$65,000, or a yearly income of considerably over \$200,000. One hundred and fifty thousand dollars has also been appropriated for building purposes.

John Hamilton, secretary of agriculture of Pennsylvania, has been appointed farmers' institute specialist in the Office of Experiment Stations, U. S. Department of Agriculture, and has entered upon his duties.

The Sphinx Club, an organization of New York City, composed largely of advertising agents and publishers, recently met at the Waldorf-Astoria in a session in which the entire evening was given to the subject of agriculture. The principal speakers were Colonel J. H. Brigham and Herbert Myrick, editor of the *American Agriculturist*. It is a hopeful sign when such men as these give a whole evening to the serious discussion of agriculture.

The Missouri Agricultural College has begun the publication of a series of bulletins on "Agriculture in the Public

Schools," in which it is intended to present in a systematic way for the use of teachers the principles of agriculture and horticulture. Two bulletins have already been published dealing with elementary agricultural questions and the plan promises much for the advancement of agricultural education in fitting teachers for work in common schools.

According to the financial statement of the University of Minnesota for 1902, the twenty-three one hundredths of a mill which the state levies for its support brings \$150,000. The land grant itself produces \$95,000, the income of the University itself is \$125,000, and the state also makes a deficiency appropriation of \$35,000, which makes a total of almost half a million, of which the state furnishes about \$185,000.

Plans are being made and rules and regulations formulated for a dairy test at the Louisiana Purchase Exposition from May to November of next year. The different cattle breeders' associations have been invited to furnish herds for this. The object is to demonstrate practically how economically milk and butter may be produced under certain given conditions. Representatives of the cattle breeders' organizations have been in conference with Chief Coburn at St. Louis upon his invitation, and he is relying upon them, together with the foremost dairy experts of the country, to work out the plans for the most thorough and satisfactory test ever undertaken. There will be three classes provided for the cows entered for this test, viz: Class A, consisting of twenty-five cows; Class B, fifteen cows, and Class C, ten cows. For the latter class only cows of the Devon, Brown Swiss, Red Polled and Dutch Belted breeds will be eligible.

The cows will be in the Live Stock Department, and the milk when drawn

will go to Chief Taylor of the Agricultural Department, under whose supervision it will be made into butter and cheese, and exact records kept of each cow's performance and product.

The work of modifying the plans for the building for the United States Department of Agriculture, so as to adapt them to the needs of the Department and to the reduced appropriation is to be taken up at once, by the officials. The bill as finally passed by Congress gave only \$1,500,000 for this purpose, and it is necessary to remodel the plans completely. D. E. Salmon, B. T. Galloway and A. C. True have been appointed to act as a building committee.

A party of forty-six German agriculturalists, landowners and students, including representatives of the German Agricultural Society, will make a tour of this country during May and June for the purpose of studying American agriculture. A very complete tour of the country has been arranged by the United States Department of Agriculture, and J. O. Schulte of that department will conduct the party. Arriving at New York about April 29, the party will proceed westward by way of Washington, Cincinnati, Lexington, Ky., St. Louis, Kansas City, Denver and San Francisco, visiting several agricultural colleges and experiment stations on the way.

The return trip will be through the northern part of the United States, and time will be given for visiting large wheat farms, ranches and the flouring mills and pork packeries of Milwaukee and Chicago.

The trip is arranged to show to best advantage, for the time given, the multiplied agricultural interests of the country. The party sails for Germany, June 30th.

Book Reviews.

THE BOOK OF CORN. Prepared under the direction of Herbert Myrick by the most capable specialists, including among others, O. D. Shamel, of the Illinois Experiment Station, H. J. Waters, of the Missouri Station, and E. B. Voorhees, of the New Jersey Station. Orange Judd Company, New York and Chicago.

The remarkable advancement that has been made toward bettering the types of corn in the United States by means of breeding, selection and proper cultivation, has opened a large field for the cultivator and investigator, and this, together with the value of the crop, gives ample justification for this publication. The book takes up the subject in a complete and exhaustive manner, treating of the history and varieties of the cereal, the principles of its growth, breeding and selection, judging, cultivation, harvesting, marketing, diseases, etc. The book is copiously illustrated, popular in style and is worth the careful perusal of all corn growers.

BACTERIA IN MILK AND ITS PRODUCTS.
By H. W. Conn, Ph. D., Professor of Biology in Wesleyan University. Cloth, 12 mo., 300 pages, 43 illustrations. Price \$1.25 net.

Successful dairying at the present time depends, to a very large extent, upon skill in handling bacteria. It is impossible to meet the present conditions of the city milk supply, of butter making and cheese manufacture, without a knowledge of the relation of these microscopic organisms. Bacteriology has become, therefore, a necessary part of dairy courses in our dairy schools. The subject is, however, equally important in other directions. The demonstrated connection between milk bacteria and the distribution of certain diseases has brought the subject of bacteria of milk products forcibly to the attention of the boards of health and sanitarians.

Dr. Conn is a teacher of wide experience and reputation, whose statements upon the subject are considered as authority the country over. While the book is designed especially for the use of students, it also meets the needs of all persons engaged in the production and distribution of milk and its products. It is in our opinion the most valuable book treating of the dairy interests that has appeared for a number of years, and we expect to see it a standard text in every dairy school of the country.

Lice are parasites on all animals and bother cattle more than any other, mostly in winter, and are particularly numerous when cattle are neglected, half-starved or dirty. Young animals are especially liable to be affected, and sometimes even well-kept cattle suffer severely.

There are two kinds of lice—true lice and bird lice. The true lice are broader, have a squarish head, are brown in color, are biters, and live on the hair and scales of the skin. The bird lice are usually found on unthrifty animals, and true lice on thrifty as well as unthrifty.

Such remedies as Zenoleum are said to be very effective. Dilute as required and apply with a spray-pump. If no spray-pump is at hand, drive animals, if many are to be treated, into a narrow chute and apply the emulsion with a common watering-can, being careful to treat all parts of the body. The emulsion should be applied on a sunshiny day and repeated in about four or five days afterwards.

When animals are kept on the place, remember that the stables in which lousy cattle are kept are quite as lousy as the cattle and should be treated in the same way as the cattle themselves. Eternal vigilance is the price of keeping cattle free from lice.

Agricultural Chemicals and Fertilizers.

The demand continues strong for the leading ammoniates, without, however, any special feature. Nitrates are firm and business is of moderate proportions, while inquiry from the western farmers is expected to develop before long. Prices for potash salts have been fixed for the year and will remain unchanged until the first of March next, when the customary enhancements take place.

AMMONIATES.

Nitrate of Soda, spot, per 100 lbs.....	\$2 00	a	\$2 05
Cottonseed meal, p. ton. c. i. f. N. Y..	27 00	a	28 00
Sulph. ammonia	2 12½a		3 15
Dried Blood, New York, low grades..	2 60	a	2 65
Dried blood, Western, high grade, fine ground	2 70	a	2 75
Fish scrap, at New York.....	2 55	and	10
Tankage, per unit.....	2 60	a	10

PHOSPHATES.

Acid phosphate, per unit.....	55	a	60
Bone black, spot, per ton.....	16 00	a	17 00
Ground bone, per ton.....	21 00	a	23 50
S. C. phosphate rock, ground, per 2,000 lbs.....	5 00	a	5 50
S. C. phosphate rock, f. o. b. Ashley River, 2,400 lbs. dried.....	3 25	a	3 50
Florida, high-grade phosphate rock, f. o. b. Fernandina, per ton.....	6 50	a	7 00
Tennessee phosphate, f. o. b. Mt. Pleasant, domestic	3 50	a	3 60
Double manure salt (48 a 49 p. c. less than 2½ p. c. chlorine), shipment, per lb.....	1 09	a	
	Basis	48	p. c.
High grade manure salt (90 a 93 p. c. sulphate potash), shipment.....	2 08	a	
	Basis	90	p. c.
Manure salt, in bulk, 20 p. c. per unit.			

POTASH.

Kainit, future shipment, per ton.....	9 05	a	
Mur. potash, 80 p. c., future shipment	1 80	a	
Keiseret, future shipment, per ton....	7 35	a	7 50

Wanted: MARCH NUMBERS OF THE AGRICULTURAL STUDENT. By an oversight the March issue was entirely exhausted. Any one returning a March copy to us will receive in return 6 cents in stamps and the favor will be greatly appreciated.

AGRICULTURAL STUDENT
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